

Ser. No. 09/853,856
Attorney Docket No. 2524-03

REMARKS

The many courtesies extended by the Examiner in the recent telephonic examiner interview are noted with appreciation. The Examiner has withdrawn claims 4-7, 13-16, 18-20, and 24-31, as being drawn to a non-elected species or depend on a non-elected generic claim. The Applicants reassert that they traverse the restriction requirement.

Claim 12 was objected to because it was not clear to the Examiner what a 60-degree point was. Claim 12 has been amended to claim a tapered point. This amendment is supported by Figs. 3, 5(a), 5(c), 5(d), 6, and 10.

Claim 21 was objected to because the terms "said center conductor" did not have an antecedent basis. Claim 21 was amended as suggested by the Examiner.

The drawings were objected to because the Examiner indicated that element 20, element 110, element 102 and element 524 were not contained in the submitted drawings. It is believed that the Examiner's objections are without merit because the disputed elements are contained in the drawings. Element 20 is in Figs. 1 and 2; element 110 is in Figs. 2, 3, 5(a), 5(b), 5(c) and 5(d); element 102 is in Figs. 4(a) and 4(b); and element 534 is in Fig. 7. Thus, no corrections or amendments to the drawings are necessary. To assist the Examiner, another set of drawings is attached to this response for his file.

Ser. No. 09/853,856
Attorney Docket No. 2524-03

The specification was objected to due to two informalities. Amendments to the specification were made pursuant to the Examiner's suggestions.

Claims 1-3, 8-12, 17, and 21 were rejected under 35 USC §103(a) as being unpatentable over Hadwin, et al., in view of Kazama.

Hadwin, et al., teaches a way to take a bed-of-nails test probe and make it a high impedance probe. The input impedance provided by the FET Q1 is several Megohms. In this manner, the circuit under test is not "loaded", i.e. there is no current drawn from it. This limitation is discussed exclusively throughout the specification and the claims of the prior art patent. Also to be noted, is that the high-impedance portion of the probe is a lumped network inside of an enclosure. An additional major difference from the present invention is that the ground connection is provided by a separate probe.

The present invention claims a method for controlling the *characteristic impedance*, Z_0 of a 2-wire, distributed (not lumped) transmission line structure. The location of this impedance is distributed along the entire probe structure and is kept constant over the entire length of the structure. In this way, high-frequency signal reflections caused by impedance mismatches are eliminated. Therefore, it is apparent that Hadwin, et al., teaches away from the claims of the present invention. Also claimed is a ground connection in the same probe structure as the signal connection.

Kazama teaches a method for taking a bed-of-nails test probe and "favorably" controlling its contact pressure. They also teach a method and

Ser. No. 09/853,856
Attorney Docket No. 2524-03

structure for making a coaxial probe and accessing two parts of a printed circuit board. Since there is no attempt to control the *characteristic impedance* Z_o of the Kazama probe device, it does not teach a method of propagating high-frequency signals along the probe. Propagation of high-frequency signals is impossible due to the very large series inductance provided by the compression spring. This series inductance acts like a lumped impedance at high frequencies and would unfavorably attenuate these signals as they propagate to test equipment. Furthermore, the lumped impedance of this probe changes as it contacts the test point because, as is well known in the art, the inductance of a solenoidal coil with a given number of turns changes linearly with its length.

The present invention claims a coaxial probe where the characteristic impedance Z_o is favorably controlled along its length and a structure, which accesses two parts of a printed circuit board. Also claimed is a probe for accessing two parts of a printed circuit board with different distances between the parts (pitch) using the same probe cross-sectional structure. In addition, a method and structure for making said probe compliant while maintaining a constant Z_o along the length of the probe as the two electrodes are moved relative to one another in the longitudinal direction, is claimed.

In order to further define these features the independent claims have been amended. Claims 1 and 21 have been amended to include the following features, which are supported in the specification in the following page and line numbers:

"a non circular outer electrode casing", see page 4, lines 14-17, Figs. 3, 5(a), 5(b), 5(c), and 6;

Ser. No. 09/853,856
Attorney Docket No. 2524-03

"the pitch of said protrusion can be varied by affixing said protrusion on said outer electrode to match a pitch of the first point and the second point without affecting a characteristic impedance of a coaxial cable assembly, the coaxial connector and said probe mount", see page 3, lines 4-7, page 5, lines 6-8, page 8, lines 3-17, and page 10, lines 6-9; and

"wherein said coaxial probe is configured to match an impedance of the coaxial cable assembly", see page 3, lines 4-7. In addition, dependent claims 32-35 have been added. These dependent claims are for the features of a spring loaded outer electrode and a resilient coax connector. These features are supported in the specification on page 10, lines 11-20. Thus, with the amendments to these claims and the discussion above, it appears that the pending claims are allowable.

Having responded to each and every objection and rejection raised by the Examiner, it is believed that the patent application is now in condition for allowance, and such allowance is respectfully requested. If the Examiner has any questions or suggestions for expediting an allowance in this matter, the Examiner is invited to call the undersigned collect.


No additional fees for the newly added dependent claims are necessary due to the cancellation of three dependent claims and the withdrawal of nineteen claims due the restriction requirement. This Response to Office Action is submitted in response to the office action dated March 4, 2003, making this response due June 4, 2003. Filed concurrently herewith is a Request for a Three-Month Extension of Time, making this Response due by September 4, 2003. It is respectfully requested that, if necessary to effect a timely response in

Ser. No. 09/853,856
Attorney Docket No. 2524-03

application Serial No. 09/853,856, this paper be considered as a Petition for an Extension of Time, sufficient to effect a timely response at any time during prosecution. The Commissioner is authorized to charge this three month extension fee of \$465.00, and any fees or credit any overpayment under 37 CFR §§ 1.16 and 1.17 which may be required during the entire pendency of the application to Deposit Account No. 01-2335.

Respectfully submitted:

Dated: September 3, 2003

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